

AMENDMENT

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 17. (Cancelled)

18. (Currently Amended) An audio-visual object browser system that inputs MPEG-4 data having a scene description graph and data related to at least one object, comprising:

an audiovisual object demultiplexer and binary format of scene browser for interacting with a user;

a binary format of scene (BIFS) scene description graph interpreter connected to the audiovisual object demultiplexer and binary format of scene browser for interpreting the MPEG-4 data; and

a media decoder, compositor and renderer that receives the interpreted MPEG-4 data and presents at least one object on the audiovisual object demultiplexer and binary format of scene browser.

19. (previously presented) The audio-visual browser system of claim 18, wherein at least one control signal from at least one user input device is provided to the audiovisual object demultiplexer and binary format of scene browser.

20. (previously presented) The audio-visual browser system of claim 18, wherein the MPEG-4 data having a scene description graph and data related to at least one object comprises MPEG-4 coded content, the MPEG-4 coded content including at least one of audio media, visual media and synthetic media.

21. (previously presented) The audio-visual browser system of claim 18, wherein the binary format of scene (BIFS) scene description graph interpreter invokes at least one media decoder based on the scene description graph.

22. (previously presented) The audio-visual browser system of claim 18, wherein the binary format of scene (BIFS) scene description graph interpreter comprises:

at least one object node; and

at least one corresponding object programmer interface, each object programmer interface connected to a corresponding one of the at least one object node.

23. (previously presented) The audio-visual browser system of claim 22, wherein the media decoders, compositor and renderer comprises:

at least one decoder, each decoder connected to a corresponding one the at least one object programmer interface; and

a scene compositor connected to the at least one decoder.

24. (previously presented) The audio-visual browser system of claim 23, wherein the scene compositor is connected to the audiovisual object demultiplexer and binary format of scene browser and the audiovisual object demultiplexer and binary format of scene browser is connected to the scene compositor.

25. (previously presented) The audio-visual browser system of claim 18, wherein the binary format of scene (BIFS) scene description graph interpreter comprises:

a VideoObject2D node or a MovieTexture node connected to the audiovisual object demultiplexer and binary format of scene browser;

a video object programmer interface connected to the VideoObject2D or MovieTexture node;

an AudioSource node connected to the audiovisual object demultiplexer and binary format of scene browser;

an audio object programmer interface connected to the AudioSource node;

an ImageTexture node connected to the audiovisual object demultiplexer and binary format of scene browser; and

an image object programmer interface connected to the ImageTexture node.

26. (previously presented) The audio-visual browser system of claim 25, wherein the media decoders, compositor and renderer comprises:

a video object decoder connected to the video object programmer interface;

an audio object decoder connected to the audio object programmer interface;

an image object decoder connected to the image object programmer interface; and

a scene compositor connected to each of the video object decoder, the audio object decoder, and the image object decoder.

27. (previously presented) The audio-visual browser system of claim 26, wherein the scene compositor is connected to the audiovisual object demultiplexer and binary format of scene browser and the audiovisual object demultiplexer and binary format of scene browser is connected to the scene compositor.

28. (previously presented) The audio-visual browser system of claim 25, wherein the binary format of scene (BIFS) scene description graph interpreter further comprises:

a proto node; and

a native proto programmer interface connected to the proto node.

29. (previously presented) The audio-visual browser system of claim 28, wherein the media decoders, compositor and renderer comprises:

- a video object decoder connected to the video object programmer interface;
- an audio object decoder connected to the audio object programmer interface;
- an image object decoder connected to the image object programmer interface;
- a native proto implementation connected to the native proto programmer interface; and
- a scene compositor connected to each of the native proto implementation, the video object decoder, the audio object decoder, and the image object decoder.

30. (previously presented) The audio-visual browser system of claim 29, wherein the scene compositor is connected to the audiovisual object demultiplexer and binary format of scene browser and the audiovisual object demultiplexer and binary format of scene browser is connected to the scene compositor.

31. (previously presented) The audio-visual browser system of claim 25, wherein the binary format of scene (BIFS) scene description graph interpreter further comprises:

- a script node;
- an interpreter programmer interface connected to the script node; and
- a scripting interface.

32. (previously presented) The audio-visual browser system of claim 31, wherein the media decoders, compositor and renderer comprises:

- a video object decoder connected to the video object programmer interface;

an audio object decoder connected to the audio object programmer interface;
an image object decoder connected to the image object programmer interface;
a native proto implementation connected to the native proto programmer interface;
a JavaScript interpreter connected to the interpreter programmer interface;
a Java interpreter connected to the interpreter programmer interface; and
a scene compositor connected to each of the scripting interface, the native proto implementation, the video object decoder, the audio object decoder, and the image object decoder.

33. (previously presented) The audio-visual browser system of claim 32, wherein the scene compositor is connected to the audiovisual object demultiplexer and binary format of scene browser and the audiovisual object demultiplexer and binary format of scene browser is connected to the scene compositor.

34. (previously presented) The audio-visual browser system of claim 32, wherein the JavaScript interpreter and the Java interpreter are connected to the scripting interface.

35. (previously presented) The audio-visual browser system of claim 34, wherein the multimedia browser supports programmatic behavior and interaction via the JavaScript interpreter and the Java interpreter to modify the scene internally.

36. (previously presented) The audio-visual browser system of claim 31, wherein the scripting interface is connected to the audiovisual object demultiplexer and binary format of scene browser.

37. (previously presented) The audio-visual browser system of claim 18, wherein at least one control signal from at least one user input device is provided to the audiovisual object demultiplexer and binary format of scene browser and to the binary format of scene (BIFS) scene description graph interpreter.

38. (previously presented) The audio-visual browser system of claim 18, further comprising an adaptive audio visual session connected to the audiovisual object demultiplexer and binary format of scene browser.

39. (previously presented) The audio-visual browser system of claim 38, wherein at least one control signal from at least one user input device is provided to the adaptive audio visual session.

40. (previously presented) The audio-visual browser system of claim 38, wherein the adaptive audio visual session comprises:

- an adaptive audio visual session external interface;

- a browser specific binding connected to the adaptive audio visual session external interface; and

- a browser programmer interface connected to the browser specific binding.

41. (previously presented) The audio-visual browser system of claim 40, wherein the audiovisual object demultiplexer and binary format of scene browser is connected to the browser programmer interface.

42. (previously presented) The audio-visual browser system of claim 40, wherein at least one control signal is provided to the adaptive audio visual session external interface.

43. (previously presented) The audio-visual browser system of claim 42, wherein the at least one control signal is an adaptive audio visual session external script or applet.

44. (previously presented) The audio-visual browser system of claim 18, wherein the multimedia browser supports programmatic behavior and interaction via at least one of Java and JavaScript to modify the scene internally.

45. (previously presented) The audio-visual browser system of claim 18, wherein the multimedia browser supports external interface for BIFS player control in response to changing resources and support of user interaction.

46. (Currently Amended) A computer-readable medium having instructions that control a computing device to provide an audio-visual object browser that operates on MPEG-4 data having a scene description graph and data related to at least one object, the instructions comprising:

providing an audiovisual object demultiplexer and binary format of scene browser for interacting with a user;

interpreting a binary format of scene (BIFS) ~~scene~~ description graph associated with the MPEG-4 data from the audiovisual object demultiplexer and binary format of scene browser; and

decoding, composing and rendering the interpreted BIFS scene description graph on the audiovisual object demultiplexer and binary format of scene browser.